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Knapp Looks Back

A Candid Conversation with NSF's Departing Chief

Edward A. Knapp officially stepped down this week as Director of the National Science Foundation to return to research at the Los Alamos National Laboratory, where he was formerly head of the Accelerator Technology Division. At Los Alamos, Knapp will be a Senior Fellow—a privileged position—and will also serve as a research adviser to the lab's Director. In an interview with SGR August 15, he ranged over many topics. Following are excerpts, edited by SGR for brevity and clarity:

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SGR. You have a six-year presidential appointment. There was surprise when you decided to leave after 22 months as Director.

Knapp. When I came to Washington [as an Assistant Director of NSF], at the end of August 1982, I had at that time planned to stay for two years so that I could get back to research. I had a job change in the middle.

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SGR. But when you were unexpectedly elevated to Director [in November 1982], did you stick to that two-year deadline?

Knapp. I didn't say that I would only do it if I could leave at the end of two years. But I didn't also say I wouldn't. There hasn't been a Director in recent times who has stayed for six years. It's certainly following the pattern of people who take appointive positions in Washington. In general, their tenures have been considerably shorter than four years. There's a fair bit of difficulty in coming to Washington if you realize that it's a temporary position. You keep a home in another part of the country and in Washington.

SGR. The House committees that the Foundation reports to were supportive, but kept egging you on to do even more than the Administration was proposing.

Knapp. In education, certainly. As far as engineering is concerned, the Foundation really understands that if we're going to insure the health of science and technology in this country and its universities, we really have to be a major player in engineering. We haven't been. It means a new program for the Foundation, and it means that we're going to have to be very careful about the way that we expand into this area. I don't feel that we're overfunding science in any sense. We're really marginal in the way we fund science in the country. But we have to be very careful as we try new things that we don't destroy anything we've already got.

SGR. Are you concerned that engineering might expand at the expense of science in NSF?

Knapp. My worry is that it could. We have to be careful, particularly in the way we present things to Congress. Also, our interest in expanding interdisciplinary research runs into the problem that departmental boundaries in universities are fairly rigid. It would be a real positive step for the country's educational system if the boundaries between departments—between, say,

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In Brief

The Administration has wildly underestimated the cost of the permanently manned space station that's now coming to life inside the federal budget process, according to the Chairman of NASA's Task Force on Scientific Uses of the Space Station, Peter Banks, Professor of Electrical Engineering at Stanford. The commonly used $8-billion price tag leaves out launch facility and operational costs that could total another $10 billion, Banks says. With memories still fresh of Shuttle overruns eating up science budgets, space researchers are concerned that NASA's chimerical estimating techniques will again crimp their programs.

The Action Committee for Higher Education—sponsored by virtually all the major university associations on the Washington scene—has rendered its verdict on the education-related voting records of all members of the 98th Congress. Single copies of its report are available without charge from the Committee, Suite 825, One DuPont Circle, Washington, DC 20036; tel. 202/833-4766.

The Arctic Research and Policy Act of 1984, establishing a five-member Presidential Commission to develop and recommend an arctic research policy, has been signed into law by the President. The National Science Foundation, which manages US arctic research, is designated in the legislation as the lead agency for implementing the policy.

. . . Pressure for Less Passive Role in Education

(Continued from page 1)

physics and materials science, solid state physics and chemistry and mechanical engineering and chemical engineering—could be a little looser and move around a little more.

SGR. Can NSF influence that by making money available for interdisciplinary work?

Knapp. It's very complicated. We do make money available for that. But within universities, quality control is basically exercised by individual departments. At a young point in a man's career, if he's going to become a member of a department, he almost has to be in the core of the discipline that he's working on in order to get the kind of credentials he needs to get tenure. There are lots of forces that drive young people to not work in interdisciplinary research until they're established. Once a person gets established, I think NSF's program managers do a pretty good job in trying to get work going between the various scientific and engineering disciplines. We have a new program in chemistry of life processes, which the biology and chemistry divisions are both working on. But having interdisciplinary money doesn't necessarily solve the problem. We can influence, but we can't solve the problem.

SGR. What happened with education?

Knapp. Let's go back to what Congress was pushing for and what the Administration was pushing for. In education, we have had years of experience in funding research into how you teach science and science education, and we supported workshops for teachers. We had long discussions with Congress and the Administration this year about what is the best approach for the NSF to take on this problem. Internally at the NSF, while there was a realization that we had done some quite good things in the past years, we could have done somewhat better with a slightly different approach to science education in the pre-college years. We're trying to put together programs now that will change the way that NSF goes about this. NSF, historically, has been an agency where we receive proposals, more or less unsolicited, to general guidelines. We try to choose the best quality. While that works very well in scientific disciplines and engineering, the feeling in Congress was that in education we needed a more programmatic approach, rather than just responding to the outside pressures. We really had a charge to have a program to improve science education in schools, and not be just a grant-making agency. We're working fairly hard to see if we can structure the work. Bassam Shakhashiri [former Director of the Institute for Chemical Education, University of Wisconsin-Madison, appointed in April as NSF Assistant Director for Science and Engineering Education] comes here with excellent credentials and is working very hard to try to develop an approach that's slightly different. A less passive approach. We would still respond to proposals, but the request for proposals could be much more directed toward programs in particular areas where we and our outside advisory committees feel that the country's science education needs help. If

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Senate Confirms NSF Head

Erich Bloch made it through the Senatorial confirmation process the easy way August 6, when, on a motion by Senator Edward Kennedy (D-Mass.), and without the customary confirmation hearing, the former IBM executive was confirmed by voice vote as Director of the National Science Foundation. The summertime hurry and the non-controversial nature of the appointment produced the smooth passage.

The vote was taken after Kennedy, a longtime friend of NSF, asked for "immediate action on this important nomination." At the time of his confirmation, Bloch held an interim appointment that would have expired with the current Congress. Bloch has been around NSF a good deal since the announcement of Director Edward A. Knapp's resignation in June, but won't take over officially until he's sworn in. That's scheduled for September 4, with Presidential Science Adviser George A. Keyworth II administering the oath of office.

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. . . Social Scientists "Must Make Case to OMB"

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we get that approach in here, I don't think we're going to see much difference between the Administration and the Congress in the enthusiasm with which the programs are pushed.

SGR. How do you feel about the budget for science education?

Knapp. We have less than $100 million to spend on science education. This is a $20-billion problem, and the amount of money that we have, if spread uniformly over the science aspects of education would have no impact whatsoever. We have to be careful what we focus on and what we try to do.

SGR. What is the focus?

Knapp. Bassam is trying to work with the external community of educators and come up with some programs which he and they feel are really something that would make an impact.

No "Gobs of Money" for Education

SGR. What brought this Administration around on science education? When it first came in, it downgraded the federal role and even abolished NSF's science-education directorate.

Knapp. I think [Secretary of Education] Terrel Bell has made a big difference within the Administration. He's a good voice for quality education. Also a number of reports, by Bell's Commission and the National Science Board Commission on Science Education, and others, have all had a positive impact. But this Administration is not about to go out and spend great gobs of federal money on education. I think they would like to be selective and spend it where they feel it's really important to spend it, and get back to supporting the fundamentals, like science education, and not the things on the periphery.

SGR. What role did OMB play in Foundation affairs?

Knapp. They play a very large role. I personally had a very good relationship with the OMB, with the [NSF budget] examiner and with Hugh Loweth [Deputy Associate Director, OMB Energy and Science Division]. If you're competent and explain the programs you want to push, and explain how you're doing things, they'll be your supporters.

SGR. Did they thwart anything important you wanted to do?

Knapp. We always argued about the absolute dollar value, but on everything that we really pushed very hard at the OMB, we managed to get budget. They are perhaps somewhat more conservative than we are. They don't want to go quite as fast in some areas. They're defending the public's purse pretty well. Particularly with new programs, they like to start things relatively slowly, see if they work out, see if the quality is there. And then they're willing to be convinced that things ought to grow.

SGR. The social sciences have not shared in the growth.

Knapp. We've changed the emphasis in what was being funded in the social sciences to the areas which are more quantitative. The data bases, the things with numerical analysis involved. With that as a solid scientific basis for some of the social sciences, people in the Foundation have argued for, and I think have got, a pretty good restitution for the social sciences. But it's based on convincing the OMB that there's quality in the program.

SGR. Quantification is not revered by every school of the social sciences.

Knapp. There is no area in the social sciences which has been eliminated from the NSF. It's a little early to say what's going to happen. The National Academy of Sciences has a major study going on on the thrusts and priorities in the social sciences. I think from what I've heard of that study that they're going to be very thoughtful in their recommendations, and I would imagine that the Foundation's Division of Social Sciences will craft their requests for programs very carefully after the priorities of this group.

SGR. The social scientists' lobby in Washington says support hasn't yet returned to the purchasing power of 1980.

Knapp. They have to make their case to the OMB on the basis of what they have in their programs, not what it used to be. That's the way it ought to be.

SGR. Since they were cut so badly, does not mean the programs were found lacking?

Knapp. I don't think they've done badly.

'Didn't Understand Social Sciences"

SGR. By the yardstick of the real worth of the social sciences?

Knapp. I came into the NSF saying I didn't understand the social sciences and I was going to try to learn. I leave the NSF saying I really don't understand all of the social sciences. I find fascinating some of the questions they ask and the kind of studies that they do, but I really don't know enough about the social sciences. They have very different ways of working and of judging results, and I'm familiar with the physcial sciences. I'm not going to say that one science has more or less intrinsic worth than another.

SGR. If you could wave a magic wand over Founda-

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. . . Disappointed with NSF's International Role

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tion affairs, what would you do?

Knapp. In university science, the overall funding for scientific research is not optimum. I think the country would get very productive work out of the universities if we could increase the budgets even more than we have. University science, particularly as it interacts with the training of students and getting highly qualified people into American industry, is extremely important. If we could improve the budget situation, there are opportunities in all of the sciences. Continuing the budget increases [about 12 percent per year] that we've had over the last two years could be a very valuable thing. In times of little inflation, you want to keep the budget increases so that the system can absorb and handle the changes without being jerked around too much. Something like that 12 percent a for a few more years. In particular, the instrumentation aspects of the budget have been poor. We've made tremendous changes in that over the last two years. But it's going to take more than two years to undo 10 years of neglect.

Sees Big Growth in Engineering Role

The new engineering program [Centers for Cross-Disciplinary Research in Engineering] that we have started and will be continued has a potential to really make a major impact on engineering training and research in this country. There are some aspects of the program that shouldn't be lost on the engineering community in the universities. And that is that it is an overt attempt to put together groups across disciplinary lines in engineering, and it is felt by the National Academy of Engineering [which studied the program for NSF] and also by myself and people within the Foundation that to do first-line engineering research, it has to be interdisciplinary, it has to be like industry does it. It has to be in centers, rather than through small, individual grants—the one-man, one-graduate-student approach. The number of senior investigators should increase dramatically under this program. Given a number of years for this to get started and going, I would think we could double, or more, the suppport of engineering over the next few years. I think we should. I think the NSF and the Administration should consider this as a new responsibility that the NSF had not had before and now has.

SGR. You've expressed a lot of interest in NSF's international role.

Knapp. The NSF has several responsibilities in international science. It administers bilateral scientific agreements and it also has responsibility for funding the sciences independently of those agreements. Some of the sciences are driven by global concerns—some of the climate programs, ocean drilling, for example. I've been somewhat disappointed with the way that we've carried the international aspects of what we have, and I would like to see these things more integrated. When I first came to NSF, I said I was going to put a management plan into the Foundation that would do that. It's partially worked. If I were to stay on, I'd like to tune that a little bit. I think we have a very important responsibility to the country to keep our international scientific communication going. I think it's very important to science, and it's particularly important for some of the less-developed countries that we interact with. Recently in South America, science there has suffered because of the debt problems of some of the countries. Per dollar spent by the US government in international activities, I think the US gets more goodwill and more positive return to itself out of the money spent on international science than in almost any other area.

Fast Pace in Super Computers

SGR. What else for the future?

Knapp. The super computer program that we started is absolutely crucial. We have 10 years of university PhDs who have to learn how to use the highest end of computing by going to work in industry or government laboratories. They can't get it in their universities. It's ridiculous. We are only now getting universities where an aeronautical engineer, for example, can learn the simulation techniques that are absolutely central to the design of all modern aircraft. We're losing a tremendous amount of science by making access to these tools so difficult. Super computing is the program most favored by Congress this year. I think we're going as fast as we could. Expanding from zero to $40 million in just two years is not an easy thing to do. We're working with an excellent external committee, which includes most of the critics of the Foundation, to design a program which will work and give access to all sciences; not only physics, mathematics, and chemistry, but also economics, which has a real need for largescale computing if they're going to do major modeling of economic effects. The longrange plan is to install in a few universities major computer facilties. A major expense will be a network to connect other universities that win competitively in a grant-proposal process for computer time. It's important both for the sciences and for the development of computation. The pace of the program is rapid enough to press the management at the Foundation pretty hard to make sure that all the bases are covered. We have a

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. . . The Long-Running Senior Vacancies at NSF

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number of proposals coming in for these centers in the next month or so, and they should be judged and peer-reviewed and awarded sometime in the spring.

SGR. How do you feel about the fact that our scientific relations with the Soviets have been reduced to a very low level in recent years?

Knapp. I'm rather positive about scientific contact with the Soviet Union. I feel that there is a great deal that both the scientists and the countries involved can achieve and profit from by having good scientific contact. I would hope that the contacts would improve.

SGR. Did larger political considerations get in the way of trying to do that during your tenure?

Knapp. As the Director of NSF, I had very little contact with either the problem or the individuals who were involved. The collaboration that we had going with the Soviets in the ocean-drilling program was terminated before I became Director, and so was the general collaboration in science. At a personal level, the collaborative agreement [in high-energy physics research] under which I worked before coming to the Foundation was under the Department of Energy. It still is in force, and, in fact, the experiment that I'm participating in at CERN [the European Center for Nuclear Research, near Geneva], has as one of its collaborators a Russian group. During the time I have been Director of NSF, I have kept the contacts that I had with the Soviets, but that's from previous work.

SGR. As Director of NSF, did you have occasion to meet with a Soviet counterpart?

Knapp. No. But I have spoken to a meeting of the science attaches in Washington, and the Soviet and Eastern bloc was there, and we had a good exchange. That was the only time.

Difficulties in Filling Posts

SGR. How much of a problem was created by the long-running vacancies in the deputy directorship and most of the assistant director posts here during most of your stay?

Knapp. In some ways it was a problem, and in other ways not. The people who filled those positions [on an acting basis] did excellent jobs. I'm very sorry that we didn't get those positions filled very rapidly. I tried very hard. But there was a whole series of—I won't go into it. But a combination of personnel changes in the White House, people [selected for the NSF positions] getting right up to the end [of the clearance process], after a great deal of time had been invested, and then deciding that actually they couldn't come to Washington because of financial or personal reasons of one kind or another. But we have finally filled several of the positions.

Empty Seats on NSF Board

The White House's languid pace of job-filling for the upper echelons of the National Science Foundation extends not only to full-time posts there but also to NSF's senior policy body, the 24-member National Science Board. Drawn mainly from academe and industry, the Board meets monthly for two days, and at least on the statute books, functions as the board of directors for NSF.

Last May 10, as happens each even-numbered year, the terms of one-third of the members expired. As of August 27, only two replacements had been appointed: Clifford Murino, President of the University Corporation for Atmospheric Research, and Rita Colwell, Vice President for Academic Affairs, University of Maryland.

The Board takes itself seriously and is dutifully courted by NSF staff, though neither Congress nor the White House gives it much attention. In the absence of a full complement of Presidentially appointed members—a problem that long preceded the Reagan Administration—the Board carries on by conferring non-voting advisory status on its newly expired members.

SGR. Was anything more involved than the delays you've just described?

Knapp. Nothing. Just a peculiar sequence of events. The jobs are very time consuming to fill anyway. As I recall, the clearance procedure through the White House for myself when I came here was more than six months after I said, Yes, go ahead and try to do it. There was an FBI check and other checks, filing financial disclosures, and so on. "Jay" [George] Keyworth [Presidential Science Adviser] is in this act along with the Director of the Foundation in interacting with the White House, and we were very careful that everyone we proposed for these jobs had extremely good scientific credentials. Sometimes all of the things you had to fit were difficult to come up with. Keyworth pushed pretty hard, but things don't move very fast.

SGR. You've been going over budget matters with your successor, Erich Bloch.

Knapp. This is definitely his budget. One of the reasons that I timed leaving when I exactly did is that I wanted the next Director to mold the budget along lines that he felt were important. So, I've worked with him and tried to help him understand how budgeting is done here, but this is his budget. He's an engineer, so, of

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Agriculture Research Target of New Critical Study

The much-denounced agricultural-research system is currently digesting a major new study laden with big and little recommendations for change. Meanwhile, the finishing touches are being put on the report of an even broader inquiry into how the system works and might be improved.

The two studies come at a time when the intricately related federal-state-academic agricultural research enterprise has never been riper for the changes that its critics have been demanding. Prominent among these are that ag research should get deeper into the mainstream of the modern life sciences and make more use of the harsh competitive techniques that govern money-giving at the National Science Foundation and the National Institutes of Health.

The report that's already making the rounds is *The Paradox of Success: The Impact on Priority Setting in Agricultural Research and Extension*. The product of a two-year study headed by Jean Lipman-Blumen, Professor of Public Policy and Organizational Behavior at Claremont Graduate School, the study, carried out under contract to the US Department of Agriculture, contains 46 recommendations. The report states that almost of all of them were favorably received at a trial run last November before what are referred to as some 40 "key USDA/land-grant decision makers"—mostly USDA brass, extension-service directors, ag academics, and Congressional and Executive Branch staff.

Many of the report's recommendations merely called for shifting this or that advisory or priority-setting function somewhere else on the balkanized organizational chart of agricultural research. And there was even one recommendation designed to "insulate the system from scientifically indefensible disruptions" by establishing a National Agricultural Issues Commission within the National Academy of Sciences. The "decision makers" wisely balked at that one on the grounds that the proposed Council might be a "cannon loose on deck," but several members said the idea might look better in a couple of years.

But in addition to those recommendations, *The Paradox of Success* urged that "Peer review in the Agricultural Research Service and the Cooperative State Research Service should be strengthened and rigorously insulated from the political process." Another recommendation proceeded from the premise that farm boys and girls dominate the ranks of agricultural-research recruits so much that "Special efforts should be undertaken to recruit college students with non-farm backgrounds to agricultural careers." And it recommended closer ties on campus between ag research and other science-based departments, including the creation of multidisciplinary teams, training grants for researchers in non-ag departments and other incentives to draw new talent to agricultural research.

As for money, the report didn't cite any new sources or set any amount, but instead recommended that "Priorities should be established first, with budgets subsequently crafted to reflect these priorities."

What's happening with this report? The official to whom it was addressed, Orville Bentley, USDA Assistant Secretary for Science and Education, told SGR that he likes most of the recommendations, the main exception being the proposed Commission within the Academy. The report's "ideas are different from the tradition-

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Knapp

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course, he's quite enthusiastic about the engineering program. He'll do very well.

SGR. Did he make any changes in the budget?

Knapp. We haven't submitted it yet. It goes to the [National Science] Board. There is a slightly different way of organizing the budget that he's introduced, partly from his industrial background. He has divided the budget into initiatives—new programs or new emphases—and exisitng programs. Part of the funding for initiatives will be requested out of new moneys and part will come from reshuffling moneys that already exist in the Foundation. And that hasn't been done quite that way before. It's a good way of looking at the problem. It's his idea, and he and Roland Schmitt [Senior GE Vice President and Chairman of the National Science Board] are quite enthusiastic about this. But how he will organize it for submission to the Congress could be completely different. But for his submission to the OMB, yes, that's the way he would like to do it.

SGR. What advice did you have for him?

Knapp. My advice was to get on with filling the remaining appointments as quickly as possible. That the staff at the Foundation is very dedicated and that they'll help him. He has to ask, but they'll be excellent support for him and he should start using them immediately. I gave him advice about the international programs, that the [NSF] organization is not quite there, and that we really have to think a little more about how we want to do that. And that he should work as closely as he can with the OMB and the Administration. They're really a great help. One of the things which I've learned here is that the scientific community really likes very much to be a part of the decision making process. There are a lot of people who are willing to give their time to give advice to the government, and they are conscientious people.

. . . Revamping of System Drawing More Support

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al ones," he said. He added that "the deans and directors of extension are reading and digesting it, and we're getting an encouraging reaction."

But before any concrete steps are proposed on the basis of that report, Bentley said, he's waiting for a related, more extensive, study that's been in the work even longer. The study is titled *The Agricultural Technology Delivery System: A Study of Transfer of Agriculture and Food-Related Technologies.* Underway for three years, the study is headed by Irwin Feller, Professor of Economics and Director of the Institute for Policy Research and Evaluation at Penn State. Feller told SGR that Bentley and other senior officials were briefed on the report last spring, and a draft is due to be delivered to USDA next week. Briefings for midlevel officials will be held September 14 in Washington, and, following final revisions, the completed report—filling five volumes—will be delivered by the end of the year.

Given the anxious mood of the agricultural-research enterprise in this time of transition from durable safe funding to who knows what, there's little word available on recommendations in Feller's report. In fact, he shuns the word recommendations and says merely that the report spells out some "futures for USDA." Bentley says little more than that "the impact [of the Feller report] remains to be seen," but he leaves the impression that he regards it as a potentially important one in the report-strewn field of agricultural research.

Prior to the arrival of the Reagan Administration, the production, receipt, and disregard of such studies was a well-established routine in the invulnerable politics of agricultural research. But in defiance of expectations, the Administration's unsentimental scrutiny of spending and programs in the government's own labs has shook up the Department of Agriculture's inhouse research like never before. And even the Cooperative State Research Service, which is politically dominated by local interests, has been cajoled and embarrassed into reconsidering its affection for the status quo. The same goes for many of the land-grant universities.

One result is that that most dreaded of all research financing systems in agriculture, competitive grants, will come out of the current Congress with by far its biggest budget ever. Funded last year at $17 million, the program was voted $50 million by the Senate, as requested in the White House budget, and $32 million in the House, where Rep. Jamie L. Whitten (D-Miss.) has consistently blocked its growth for what he sees as a threat to research relevant to presentday farm problems. Whitten, who chairs the Appropriations Committee and its Agriculture Subcommittee, tied that budget growth to a juggling of accounts that favors his interests. But the House's near-doubling of the fund—final amount to be settled in conference next month—has ratcheted the budget for competitive grants to an unprecedented level.

With influential components of the agricultural-research enterprise now coming around to the realization that the system needs a shakeup, and is going to get it whether or not they like it, big changes are inevitable and bound to come much sooner than seemed possible three years ago.—DSG

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The Paradox of Success is available without charge from Cooperative State Research Service, USDA, West Auditors Building, Room 206, Washington, DC 20251; tel. 202/447-8752.

In Print

Major Facilities for Materials Research and Related Disciplines, report triggered by a free-for-all between and among the mandarins of material science over priorities, location, etc. for new and expanded facilities, particularly the 1-2 GeV Synchrotron Light Source that White House Science Adviser George Keyworth unilaterally sought as a centerpiece for the miscarried National Center for Advanced Materials Research, at the Lawrence Berkeley Laboratory. The study, conducted by the National Academy of Sciences for the Department of Energy, says top priority for big new facilities ($5 million and up) should go to a 6-GeV Synchrotron Radiation Facility; next comes an Advanced Steady State Neutron Facility, and then the 1-2 GeV. The study committee shunned the question of where to plant these goodies, but many Congressional delegations are already at work on that problem.

(77 pages, no charge, Major Materials Facilities Committee, Commission on Physical Sciences, Mathematics, and Resources, NAS, 2101 Constitution Ave. Nw., Washington, DC 20418.)

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National Patterns of Science and Technology Resources 1984, annual NSF report, provides broad-brush picture as well as fine details about government, academic, and industrial R&D spending, manpower, etc., with many items tracked over the longterm. Much of the data was previously issued by NSF in bits and pieces, but this publication pulls it all together, and is a valuable, convenient source.

(89 pages, no charge, Division of Science Resources, Studies, NSF, 1800 G St. Nw., Washington, DC 20550.)

Moonie Scientific Conference Heads for DC

The 13th International Conference on the Unity of the Sciences, an annual event emanating from the Rev. Sun Myung Moon conglomerate, will be held September 2-5 in Washington, DC. The theme this year is "Absolute Values and the New Cultural Revolution." A principal purpose, as usual, is to reflect scientific glitter on the controversial theologian-businessman, who is currently serving 18 months on what many civil libertarians regard as trumped up tax charges.

The program for this year's meeting lists a variety of well-known names in science, including conference regulars such as Alvin Weinberg, former Director of the Oak Ridge National Laboratory; Kenneth Mellanby, Director-emeritus of the Monks Wood Experimental Station, England; and Eugene Wigner, Princeton University Nobel laureate in physics.

In past years, attendance has been around 350-500. The conference managers decline to talk about money, but the meeting is known to be well-subsidized by Moon's treasury, and the major speakers are understood to receive generous honoraria.

The early runs of the annual conference drew scorn from scientists who were appalled at colleagues lending the prestige of the profession to the mysterious and widely despised Moon, whose latest big enterprise is the raucously right-wing *Washington Times*. But the protests of scientists have quieted in recent year, mainly from lack of interest, rather than acceptance of Moon. The conference has also brought protests from parents charging that their children were duped into becoming Moonies and are kept in the ranks through psychological manipulation.

In any case, the conference participants regularly report that Moon and his managers keep hands off the program and the proceedings. They also say that there's no other bankroll available to finance big get-togethers on the "unity of the sciences." However, there was no evidence of any serious interest in the subject prior to Moon's arrival on the scene, nor is there any outside of the conference that his organization stages.

NIH, Hughes Institute Create Program for Medical Students

Under the heading of how some things get done, there's a newly announced program to provide 30 medical students a year with scientific training at the National Institutes of Health.

The program, costing $10.5 million for the first five years, will be financed by the Howard Hughes Medical Institute, and administered in collaboration with NIH. According to an announcement from NIH's parent agency, the Department of Health and Human Services, the money will pay for "stipends, travel and miscellaneous expenses for the students, and for building renovation and construction for residential quarters, classrooms and teaching laboratories."

The program reflects the long and heartfelt interest of two senior biomedical-research administrators: Donald S. Fredrickson, Director of the Hughes Institute, who was Director of NIH from 1975-81, and his successor and old friend, James B. Wyngaarden.

Trained as physicians, both subsequently served at NIH and went on to distinguished research careers. In recent years, they have both expressed concern about a sharp dropoff in the number of medical school graduates choosing research careers—a decline that's generally attributed to the perils of grantland and the lure of high medical incomes.

Fredrickson, who recently became President of the goldplated Hughes Institute, said in the announcement that "It is expected that this early exposure to the excitement and intellectual challenge of research—after the second year of medical school—will encourage more medical students to undertake careers in biomedical research." Recruiting will start this fall for an entering class in fall 1985.

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